**The Task**

A small computer manufacturing company has commissioned you to create a worksheet that can be used to support financial decision making. You will design, create and test the worksheet.

The worksheet will take the form of a cash flow forecast and will be used to support what if? questioning, such as the impact of a sudden increase in the cost of components.

**Design Issues**

In planning your application, it is essential that you make your worksheet as flexible as possible. In order to encourage good design, keep in mind that:

* You will be given the information needed to construct your worksheet as you work.
* Some of the Information you are given may change over time.
* Before your work is submitted you will be given a list of questions/problems you will need to solve using your worksheet.

Your target user is an experienced manager who has very little knowledge of spreadsheets. This means your application must be intuitive and very easy to use.

You are taking the role of a developer, so you are expected to produce work of a professional standard. This means your application must be robust and should follow any appropriate conventions and/or standards.

**Deliverables**

1. Your application on disk or memory stick
2. An account of how the application was designed and a guide to its key features. The account should also include annotated screenshots to illustrate some of the features you feel best demonstrate your skills.
3. Your responses to the questions/problems given to you after the construction of the worksheet. You **must** provide evidence (e.g. screenshots) that your worksheet was used to determine your responses.
4. A test plan
5. Detailed test results

**Required Features/Functionality**

Your completed application must include:

* At least one fully working UserForm
* Use of cell protection, data validation and conditional formatting.
* Clear documentation of VBA code; code must also be formatted correctly
* Clear and uncluttered layout; user interface design should cater for the target user
* Use of appropriate instructions and error messages
* Ability to import or update relevant data from a database or web page.
* Good use of Excel’s advanced features e.g. charts, formulas, macros, etc.
* Good use of at least one advanced technique demonstrated over the course of the module (e.g. Monte Carlo Simulation)
* A dashboard of your own design – you will need to justify your design and your choice of information to be displayed to users.

**Cleaning Data**

1. Download the database file and import all of the data into Excel. The first task is to clean up the data using the same techniques covered by the portfolio tasks.
2. You can delete any rows containing blanks or zero values e.g. if an order quantity is 0 (zero).
3. Remove double, leading & trailing spaces from all data. You might do this using a macro, built-in functions or custom function(s).
4. Expand all *Street* data and correct errors e.g. “St” becomes “Street”
5. Correct all entries for Gender. Males should be coded “M” and females should be coded “F”.
6. Delete all duplicated records.

**Organising Data**

You are going to need to calculate total monthly sales by product for the period covered by the data (Jan 2019 – Dec 2021). It is a good idea to calculate total sales by volume (i.e. number of cases sold) because you can easily calculate the *value* of sales later on. Managers are only interested in product codes B, D and E. Hint: you might find it useful to create new columns in the raw data to store the month and year of each order.

You can calculate monthly sales in several ways but you may find it helpful to use a simple table layout and use one or more database functions. **DSUM** and **SUMIF** are good candidates for the function that can be used to populate each table. A simple layout is shown in the diagram (Fig 1). In the layout shown, you would need three tables to show the information for each year but a better approach might be to use a **pivot table** to show summary data. You can adjust the settings of a pivot table to show only the data you are interested in. This means you can *restrict* what the user sees quite easily.

A grid of white paper with black text

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**Fig 1: Sales Data Table Layout**

As well as monthly sales, managers are also interested in sales by region for the *Megawidget* range of products. They are interested in monthly sales for the WC, WS, HS and CW postal code areas. You will need to work out the best way to present this data so that it is as clear as possible. Remember that you need to show monthly sales over three years.

A list of product codes, product names, case sizes and retail prices is given in the table.

|  |  |  |  |
| --- | --- | --- | --- |
| **Code** | **Item** | **Cost** | **Case Size** |
| A1 | Megawidget S | 0.69 | 24 |
| A2 | Megawidget M | 1.29 | 24 |
| A3 | Megawidget L | 1.79 | 24 |
| B | Hyperwotsit | 2.01 | 20 |
| C1 | Ultrathing V1 | 1.79 | 17 |
| C2 | Ultrathing V2 | 2.95 | 20 |
| C3 | Ultrathing V3 | 3.39 | 24 |
| C4 | Ultrathing V4 | 3.99 | 24 |
| D | Gigastuff | 1.89 | 18 |
| E | Superwossname | 3.49 | 20 |

**Table 1: Product Data**

**The Cash Flow Forecast**

MegaWidget International is considering building a new facility so that it can manufacture more of the products it sells. The company has created designs for its own versions of product codes B, D and E.

Before the company makes a final decision about the new factory, they need to develop a financial model to determine if such a project is likely to be financially viable. You are required to build a cash flow forecast for the company that takes into account the information given in this document. You will also need to use the model to answer some basic questions the company’s managers have. The information you should include in the module is this:

* In order to finance the new factory, a loan of £650,000 will be needed. Initially, the loan will be taken over 10 years and will be subject to interest at 4.3%. You will need to calculate monthly payments and incorporate this into the cash flow forecast.
* Each month the company spends £30,000 on advertising and promotion.
* The company works on a 25% profit margin. A single case of *Gigastuff*, for instance, retails at £34.02 (18 X £1.89) and costs the company £25.52 to produce and deliver, leaving an overall profit of £8.50.
* Delivery costs are £0.50 per case.
* A government grant will contribute a lump sum of £45,000 in the first month of operation, then £4,000 per month for the rest of the first year.
* Sales are expected to follow the pattern seen in 2021.

Remember that your model needs to be as flexible as possible. Managers may want to alter variables (e.g. the length of the business loan and the interest rate) so that they can see the effects on the business. Managers will also want to see summarised data, such as graphs or even **dashboards**.

A typical layout for the cash flow part of your worksheet might be as shown in Fig 2. Remember that your worksheet will need other elements, such as a title page, navigation system, summary area, and so on.

A screenshot of a spreadsheet

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**Fig 2: Simple Cash Flow Layout**

If the cash flow demonstrates that the new facility is not financially viable, what changes could be made to make the project worthwhile. As an example, would changing the term of the business loan make a difference, or would a price increase help?

**Interrogating The Data**

The company has been offered a flat-rate delivery charge from the courier firm used to deliver products. The company proposes a single charge of £14.95 per order, regardless of the size of the order. Will the company be better off introducing this change?

The company is thinking about introducing a discount scheme for orders above a certain level. The firm plans to offer a 3% discount for orders above 20 cases, 5% for orders above 50 cases and 7% for orders above 100 cases. How will this affect the company’s profits?

The company plans to increase sales by 5% each month. Using December 2021 figures as a starting point, work out how this might affect the company’s profits and its monthly cash flow.

Managers are keen to see how sales fluctuations might affect cash flow. Use the Monte Carlo simulation technique to accomplish this. See if you can create best case and worst case scenarios for managers to look at.

Carry out some basic testing of your application and document the tests.